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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,131	07/11/2001	Tetsuzo Ueda	53074-026	2396

7590 10/20/2003

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EXAMINER	
SONG, MATTHEW J	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 10/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action	Application No.	Applicant(s)	
	09/904,131	UEDA, TETSUZO	
	Examiner	Art Unit	
	Matthew J Song	1765	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 24 September 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☒ The proposed amendment(s) will not be entered because:

   (a) ☒ they raise new issues that would require further consideration and/or search (see NOTE below);

   (b) ☐ they raise the issue of new matter (see Note below);

   (c) ☒ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

   (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See Continuation Sheet.*

3. ☒ Applicant's reply has overcome the following rejection(s): _____.

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a)☐ affidavit, b)☐ exhibit, or c)☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: *see continuation sheet.*

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the proposed amendment(s) a)☒ will not be entered or b)☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:

   Claim(s) allowed: _____.

   Claim(s) objected to: _____.

   Claim(s) rejected: *11-30.*

   Claim(s) withdrawn from consideration: _____.

8. ☐ The proposed drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.

10. ☐ Other: _____

Continuation of 2. NOTE: Claims 31 and 32 contain a new limitation of the specifying the thermal cofficients of the substrate and the epitaxial layer. The new limitations would require further search and consideration. The amendment to claim 11 would be entered if the new claims 31 and 32 were not entered.

Continuation of Item 5:

Applicant's arguments filed 9/24/2003 have been fully considered but they are not persuasive.

Applicant's argument that the layered substrate of Molnar does not exhibit bowing is noted but is not found persuasive. Applicant alleges that Molnar is silent to the process of manufacturing the layered substrate and other methods of forming a layered substrate, such as using an adhesive without heating would form a layered substrate without bowing. Applicant's arguments are noted, however forming a layered substrate without heating using an adhesive, as suggested by applicant, would still exhibit bowing because heating the substrate to a deposition temperature of an epitaxial layer (around 1000°C) would inherently cause bowing due to the differences in thermal expansion coefficients. Applicant alleges the layered substrate does not inherently exhibit bowing, however raising the layered substrate to an epitaxial growth temperature of 1050°C (col 15, ln 40-45) would cause the differences in thermal coefficients of the materials of the layered substrate to expand at different rate, thereby causing bowing. Furthermore, Molnar discloses forming a ZnO layer on a sapphire substrate by sputtering, cooling the substrate and heating the substrate in a growth chamber for forming GaN (col 15, ln

10-50), therefore forming a layer on a substrate, cooling and heating prior to epitaxial deposition is taught by Molnar.

Applicant's argument that in order to exhibit bowing, the two layered forming the layered substrate of Molnar need to be bonded together via heating at sufficient high temperatures and subsequent cooling is view as mere attorney argument and is not found persuasive because evidence is not provided supporting applicant's allegation.

Applicant's argument that the inherency is established by probabilities or possibilities is noted but is not found persuasive. The Examiner provided reasoning tending to show the inherent feature of the layered substrate exhibits bowing, namely a layered substrate of similar material with similar thermal coefficients heated to a similar temperature and cooling will inherently exhibit bowing. The burden shifts to applicant to show an unobvious difference after the Examiner establishes reasoning for inherency (MPEP 2112).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., growing an epitaxial layer so that the layered substrate exhibits less bowing (or eliminates bowing altogether) than the initial bowing exhibited by the layered substrate before the epitaxial layer was grown thereon (pg 7)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant's argument that Molnar does not inherently teach growing an epitaxial layer so as to flatten said bowed substrate is noted but is not found persuasive. Applicants' arguments are directed to flattening meaning reducing bowing, however the Examiner has interpreted flattening

to mean a reduction in surface roughness. Applicant's arguments are moot in view of the Examiner's interpretation of flattening. The Examiner maintains depositing a similar epitaxial layer on a similar substrate will inherently flatten the bowed layered substrate. Because depositing a layer of material will fill pits and cracks in substrate, thereby inherently reducing roughness and flattening the substrate.

Applicant's arguments regarding claims 15 and 19 have been considered but have not been found persuasive. Applicant alleges Westmoreland does not disclose improving the deposition using direct heating, rather Westmoreland teaches pulsed heating. Westmoreland teaches pulsed heating by locating a tungsten halogen lamp within a reaction chamber of a CVD reactor (col 5, ln 4-15), this reads on applicant's direct heating. The pulsed heating taught by Westmoreland to achieve the improved deposition is performed using a tungsten halogen lamp located within the reaction chamber. Westmoreland teaches other methods of performing the pulsed heating, but Westmoreland does disclose a heating source located in the reaction chamber to perform the pulsed heating, which improves the deposition of reactant gases over a narrow temperature range. Applicant alleges improving deposition specifically into vias. Westmoreland does teach an improved deposition into via, however Westmoreland is not limited to the deposition into vias, as suggest by applicant, note claim 1, which claims a general CVD deposition.

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